that interval, we get for the rotation period $24^h\ 37^m\ 22^s{\cdot}713$, instead of my former estimate, $24^h\ 37^m\ 22^s{\cdot}735$. And this seems the result according best with the evidence; or one may say that the rotation period is fairly represented by the value, $24^h\ 37^m\ 22^s{\cdot}71$.

It may be noted that if we ascribe the whole error to Hooke, we get the period $24^h\ 37^m\ 22^s{\cdot}681$, whereas if we ascribe the whole error to Huyghens, we get the period $24^h\ 37^m\ 22^s{\cdot}735$, and the period may be regarded as certainly lying between these extreme values (only differing by $0{\cdot}054^s$).

I conceive that had Kaiser detected the calendar errors in his computation, he would not have contended for the rejection of Hooke's observations. By applying to the ancient observations his method of taking the probable mean of modern observations, we deduce the rotation period $24^h\ 37^m\ 22^s{\cdot}71$, or perhaps giving due weight to the fact that Hooke made two drawings, we may infer a value lying even nearer to my former estimate. When we note the roughness of Huyghens' drawing, and the unsuitability of the aspect he has pictured for deducing a time-estimate, we may not unfairly consider that a somewhat larger proportion of the error should be awarded to Huyghens. Hence we should deduce some such period as $24^h\ 37^m\ 22^s{\cdot}72$. But the difference between this result and the other is not worth special discussion. The truth probably lies between these values,—

$24^h\ 37^m\ 22^s{\cdot}71$
and
$24\ \ 37\ \ 22\cdot72$

The Distribution of the Clusters and Nebulæ.

By Sidney Waters, Esq

The charts which I now beg to lay before the Society contain all the objects recorded in Sir John Herschel's general catalogue of 1864.

The projection is isographic, equal areas in the heavens being represented by equal areas *in plano*, and the objects are marked within one degree in P. D., and 4 minutes in R. A. of their true places.

It will be seen that the contents of the Catalogue have been divided into three classes:—1st. Clusters (globular and irregular); 2nd. Resolvable Nebulæ; 3rd. Irresolvable Nebulæ; each class being distinguished in the maps by a distinctive mark.

A careful study of Mr. Proctor's Distribution Charts, published in the *Monthly Notices* in 1869, convinced me that by applying this method of charting, a further insight would be gained into the laws of nebular distribution, and I believe that

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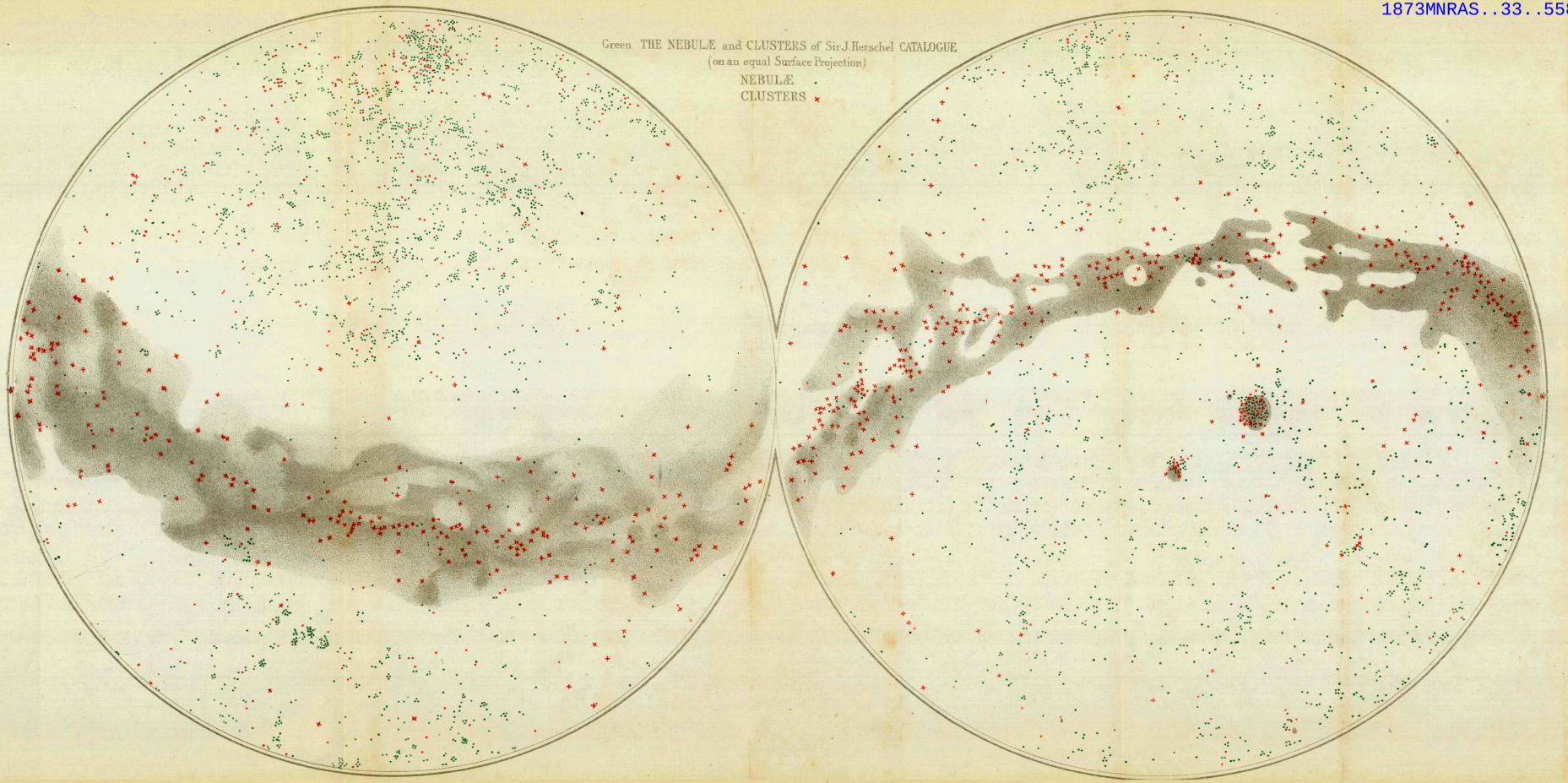

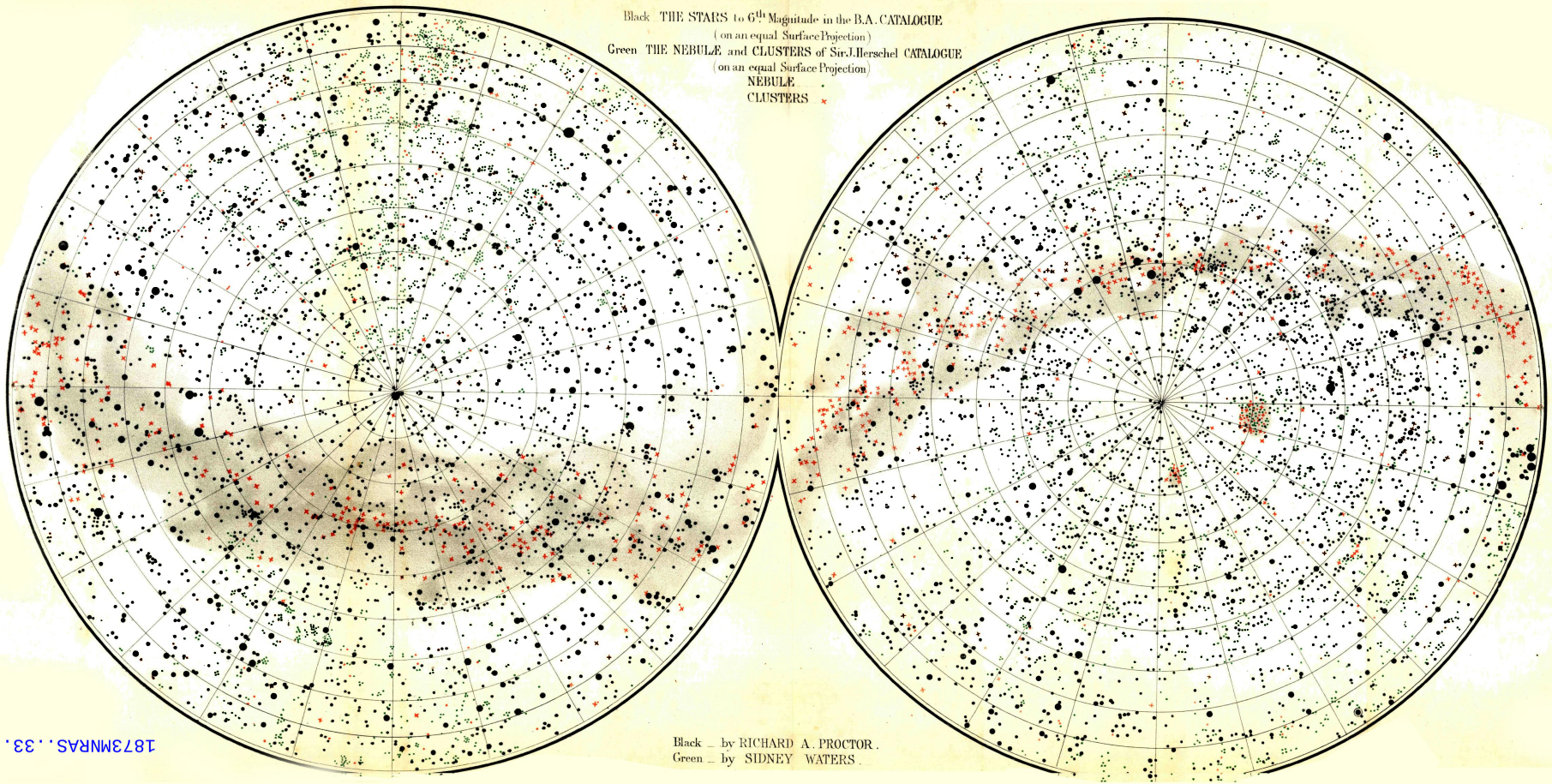

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the charts now before the Society will be found to repay careful examination.

I do not now propose to enter into a critical discussion of their teaching, but shall content myself with pointing out two obvious conclusions which they seem to indicate.

1st. The coincidences in the apparent positions of the resolvable and irresolvable nebulæ in the heavens are very significant; we not only find the great masses of resolvable nebulæ coinciding in position with the far greater clusters of irresolvable nebulæ in the neighbourhood of *Virgo* and *Coma*, but the streams and minor clusters of nebulæ are invariably followed by streams and clusters of resolvable nebulæ; and I believe that it is impossible to ascribe these peculiarities to chance.

The case made out by Whewell, and advocated by Mr. Proctor, that the *resolvability of a star group is no criterion of its distance* seems here to be established, as far as it can be established, by such means; it has long been certain that all orders of nebulæ do exist commingled in the Nubeculæ, it is now seen to be almost equally certain that they exist commingled in other parts of the heavens.

2nd. The great aggregation of clusters in the neighbourhood of the galaxy; this fact has often been noted before; but these charts seem to illustrate it most remarkably, and the conviction cannot be avoided that the clusters are part of, and most of them probably immersed in, the Milky Way itself; equally remarkable is the complete segregation of all the nebulæ (the gaseous nebulæ excepted) from the galactic zone.

These facts surely prove beyond question that not only are the clusters, which are peculiar to the Milky Way, related to the nebulæ, which seem to form a distinct scheme, but that the two schemes are probably subordinate parts of our sidereal system.

Measures of the Diameter of Venus.

By John I. Plummer, Esq.

The accompanying series of measures of the diameter of *Venus* has been made with Airy's Double Image Micrometer upon every available occasion near the recent inferior conjunction of the planet. The greatest care has been taken to ensure a steady image, by equalising the interior and exterior temperature of the observing-room, and upon all those days when the definition of the planet was not considered sufficiently good, no observation has been attempted. On the other hand, none, after having been made, are rejected in the final results, all being assumed of equal weight. The value of a revolution of the micrometer-screw was determined from observations taken by myself upon four evenings in 1868, which leave no doubt as to the exactness of the assumed